Sanitation and Food Handling

Sanitation Standards

Under terms of the School Lunch and Breakfast Agreement, SFAs shall maintain proper sanitation and health standards in conformance with all applicable State and local laws. The South Carolina Department of Education, Office of School Food Services and Nutrition, recommends that each school obtain a copy of Retail Food Establishments Regulation 61-25. Additional information regarding food safety and sanitation can be found in the National Resturant Association's ServeSafe Course book.

Reheating Potentially Hazardous Foods

From Retail Food Establishments Regulation 61-25-Chapter II, Food, page 22:

6. Reheating. If potentially hazardous food that has been cooked and then refrigerated is to be served hot, it shall be reheated rapidly to 165º F. (74º C.) or higher throughout before being served or before being placed in a hot food storage facility. The use of steam tables, bainmaries, warmers, and similar hot food holding facilities for the rapid reheating of potentially hazardous food is prohibited.

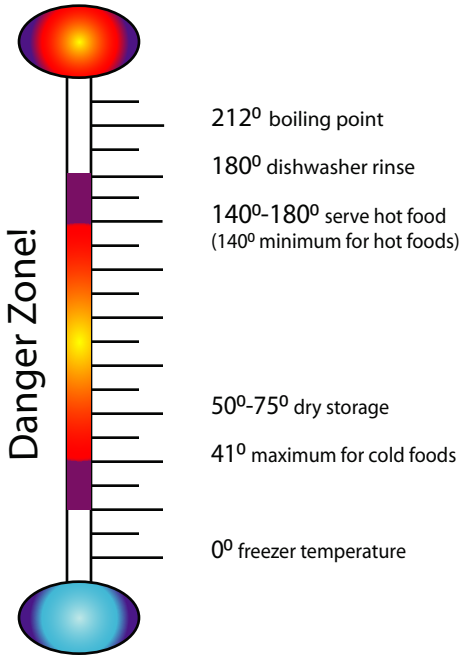
Handling Precooked Meat Patties

Precooked meat patties, such as "Charbroiled Beef Patties" and "Pre-Browned Fresh Pork Sausage Patties," have caused outbreaks of food borne illness from contamination with *Salmonella* or with a strain of *E.coli* bacteria. It is important to remember that many precooked patties are not ready to eat. With proper handling and heating to finish the cooking process, they are safe.

The U. S. Department of Agriculture advises food service institutions and commercial kitchens to keep all meat patties refrigerated or frozen before use. Refrigerated patties should be used promptly, within 3 to 4 days of refrigerated storage. These practices will prevent the growth of harmful bacteria.

The precooked patties must be thoroughly heated to 165º F to eliminate any harmful bacteria that might be present.

Temperature Chart



The danger zone favoring bacterial growth is the temperature range of 41º to 140º F. The length of time a food is allowed to remain in this critical temperature zone largely determines the rate and extent of bacterial growth that occurs.

Source: *HACCP Reference Guide*, NRA Educational Foundation

Safe Food Handling Practices Prevent Food Borne Illnesses

Preparation and Storage Rules

- Start with clean, wholesome food from reliable sources. Wash all raw fruits and vegetables before using.
- Hold frozen food at 0ºF or lower during delivery and storage.
- Scrub and sanitize all cutting boards, knives, and electric slicers immediately after contact with raw or cooked meats, fish, or poultry.
- Hold all potentially hazardous foods out of the danger zone, 41º–140ºF. Keep hot foods hot and cold foods cold.
- Reach an internal temperature of 165ºF to 170ºF for foods to be held for serving. Maintain a minimum temperature of 140ºF during the serving period.
- Re-pan any cooked food in shallow containers to be held at refrigerated temperatures. Refrigerate immediately. The center of the food should reach 41ºF within 4 hours. To hasten cooling, space the pans in the cooler to allow for adequate air circulation.
- Never serve questionable food. If in doubt, throw it out.
- Avoid cross-contamination of foods during preparation, storage, and service.

Personnel

- Wash hands with soap and water. Hands must be washed when reporting to work, after handling raw poultry and meat, smoking, sneezing, use of handkerchief, and after using the toilet. Keep all work surfaces clean and organized.
- Keep the work area clean and all spills wiped up immediately.
- Refrigerate all unused foods promptly.
- Use clean equipment in preparing, cooking, and serving food.
- Avoid touching food as much as possible. Use the proper utensils.
- Handle all utensils and serving equipment by handles and bases to avoid touching areas that will later come in contact with the food.
- Use a clean spoon to taste food.
- Keep fingernails trimmed and clean. Scrub nails with a nailbrush after a visit to the toilet and after handling raw meat, poultry, or fish.
- Keep hair clean and use a hair net or other restraint.
- Reassign employees with infected cuts or burns. These employees should not prepare food or handle equipment that will come in contact with food.

Source: National Food Service Management Institute (1995), Healthy Cuisine for Kids Workshop Trainer's Manual. The University of Mississippi: NFSMI.

E. coli

Escherichia coli are a group of bacteria normally found in the intestines of warm-blooded animals, such as food animals or humans, and in water contaminated by animal or human feces. *E. coli* are most often associated with intestinal illness or diarrhea in infants and in travelers who have consumed impure water or unpasteurized milk. It is not known at what level or dose the pathogen becomes hazardous.

Characteristics of *E. coli 0157:H7*

In 1982 a rare and more virulent strain, *E. coli 0157:H7*, was identified as the cause of two outbreaks of human gastrointestinal illness. *E. coli 0157:H7* is a pathogen that can survive refrigeration and freezer storage. If present, the bacterium can multiply very slowly at 44 degrees Fahrenheit. Low numbers of *E. coli 0157:H7* could produce infections in infants and the elderly or immune compromised. However, the infectious dose for humans has not been determined. While *E. coli 0157:H7* can be a severe contaminant, it can be easily controlled by thorough cooking.

The Centers for Disease Control (CDC) first reported cases of hemolytic uremic syndrome (HUS), a urinary tract infection, linked to *E. coli 0157:H7* in ground beef in 1982. Since then, 16 deaths have been reported to CDC.

E. coli 0157:H7 are found in intestines of animals and humans and can be transmitted through contact with fecal matter during the slaughtering process and unsafe food handling. Person-to-

Table 1 Section 22 Characteristics of Common Food Borne Illnesses

Illness	Cause	Onset	Symptoms	Spread	Foods Involved
Salmonellosis	Infection with *Salmonella* species	12–24 hours	Nausea, diarrhea, 2–7 days	Eating contaminated food; contact with infected persons	Meat, poultry and egg products
Staphylococcus poisoning	Toxin produced by certain strains of *Staphylococcus*	1–6 hours	Severe vomiting, diarrhea, abdominal cramping, 1–2 days	Food handlers who carry the bacteria on skin in pimples or cuts; who cough or sneeze on food	Custard and cream-filled baked goods, ham, poultry, egg, potato salad, cream sauces, fillings
Cl perfringens poisoning	Toxin released in the intestine	8–24 hours	Diarrhea, abdominal cramps, headache, 1 day	Eating contaminated food	Meat, poultry, and other foods held at warm temperatures
Campylobacter jejuni	Infection, even with low numbers	1 hour	Nausea, diarrhea, abdominal cramps, headache, 1-10 days	Contaminated drinking water, eating contaminated food, infected handlers, rodents, insects	Raw milk, eggs, raw beef, poultry, cake icing, water
Ecoli 0157:H7	Strains of *E coli*	2–4 days	Hemorrhaging in the colon	Eating contaminated foods	Ground beef, raw milk, chicken
Listeriosis	Infection with *Listeria monocytogenes*	2-3 days to 3 weeks	Meningitis, 2–3 days	Eating contaminated foods	Milk, vegetables, cheese, meat, seafood

Source: National Food Service Management Institute (1995), *Healthy Cuisine for Kids Workshop Trainer's Manual.* The University of Mississippi: NFSMI.

person transmission has been documented. The majority of food borne outbreaks recorded since 1982 have either implicated or associated undercooked ground beef as the primary source of infection.

CDC notes that food obtained from an unsafe source was the least reported factor in food borne illness between 1983 and 1987. Ninety-two percent of the cases where causes could be traced were due to poor food handling practices, mostly storing at improper temperatures, and poor personal hygiene of food handlers.

How Food Can Become Unsafe

There are four factors that directly cause food to become unsafe:

- time-temperature abuse,
- cross-contamination,
- poor personal hygiene, and
- improper cleaning and sanitizing.

The *ServSafe Employee Guide* contains information pertaining to these and many other subjects regarding food safety and handling. There is a six-hour and a ten-hour food safety course available for School Foodservice Directors and their staff in South Carolina. There are trained instructors available from the Department of Education's Office of School Food Services and Nutrition, Clemson Extension, and numerous directors are certified instructors for the National Restaurant Association's *ServeSafe* course.

Killing Microorganisms

There is only one fail-safe way to prevent *E. coli 0157:H7, salmonella*, and other dangerous microorganisms in cooked food products. Cooking to the proper temperature will kill all harmful microorganisms. However, you cannot be sure that food is properly prepared without properly calibrated thermometers. Most schools use bi-metallic stemmed thermometers. It is critical that cafeteria managers and operators are trained in the proper calibration methods. Thermometers should be calibrated before each shift or before each day's deliveries. Thermometers should also be calibrated any time they have suffered a severe shock (for example, after being dropped or after an extreme change in temperature). The poster on the following page, "How to Calibrate a Thermometer", can be used to train kitchen staff on this important task.

Thermometers should also be washed, rinsed, sanitized, and air-dried before and after each use to prevent cross-contamination. Use an approved food-contact surface sanitizing solution to sanitize all thermometers.

Questions & Answers

1. Q: May food or unopened milk that has been served to student or adult customers be reused or re-served to others if not consumed?

A: No. The practice of re-serving unconsumed food items to others exposes the SFA to liability for unsafe food handling practices.

The Food Code of the U.S. Public Health Service, 1999, states:

> 3-306.14 Returned Food and Reservice of Food.
>
> (A)…after being served or sold and in the possession of a consumer, food that is unused or returned by the consumer may not be offered as food for human consumption.

In addition, National School Lunch and School Breakfast Programs authorizing legislation and regulations clearly intend that meals prepared under the programs are to be served and consumed in the cafeteria or other designated eating area (see Section 4).

How to Calibrate a Thermometer

Most digital and bi-metallic stemmed probe thermometers can be calibrated easily. Two accepted methods of calibrating a thermometer are the ice-point method and the boiling-point method. To properly calibrate your thermometer, follow these steps:

Ice-Point Method

1. Fill a large glass with crushed ice. Add clean tap water until the glass is full and stir well.
2. Put the thermometer stem into the ice water so that the sensing area (from tip to about half an inch above the dimple) is completely submerged. Do not let the stem touch the sides or bottom of the glass. Wait at least thirty seconds until the indicator stops moving.
3. With the thermometer stem still in the ice water, hold the adjusting nut under the head of the thermometer securely with a wrench or other tool. Turn the thermometer head so that the pointer reads 32ºF (0ºC). Some digital thermometers have a reset button. Push it while the probe is in the ice water to automatically adjust the readout.

Boiling Point Method

For a thermometer with a temperature scale that starts above 32ºF (0ºC).

1. Bring clean water to a boil in a deep pan.
2. Put the thermometer stem into the boiling water so the sensing area (from the tip to about a half inch above the dimple) is completely submerged. Do not let the stem touch the sides or the bottom of the pan. Wait at least thirty seconds until the indicator stops moving.
3. With the thermometer stem still in the boiling water, hold the adjusting nut under the head of the thermometer securely with a wrench or other tool. Turn the thermometer head so that the pointer reads 212ºF (100ºC). Some digital thermometers have a reset button. Push it while the probe is in the boiling water to automatically adjust the readout. Note that the boilint point of water changes based on atmospheric pressure and altitude above sea level. An establishment located 5,500 feet above sea level, for example, would have to adjust the pointer to 202ºF (94ºC) using this method.

Notes: